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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,506	08/24/2006	Holger Winkler	MERCK-3218	8533
23599	7590	12/31/2009	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			JACKSON, MONIQUE R	
			ART UNIT	PAPER NUMBER
			1794	
			NOTIFICATION DATE	DELIVERY MODE
			12/31/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

Office Action Summary	Application No.	Applicant(s)
	10/590,506	WINKLER ET AL.
	Examiner	Art Unit
	Monique R. Jackson	1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/24/06</u> . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-9, 13-16, 20, 22 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 1-9, as well as Claims 13-16 and 20, which depend on Claims 1-9, provide for the use of core/shell particles, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 1-9 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

5. Similarly, Claims 22-23 provide for the use of mouldings, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 22-23 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

6. Claims 13-16 are further rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, because the claims recite a process according to claim 1, however, claim 1 recites use of the particles and fails to provide antecedent basis for several of the limitations recited in Claims 13-16. Hence, it is unclear what is meant to be encompassed by Claims 13-16.

7. Similarly, Claim 20 recites “[m]ouldings according to claim 1” however Claim 1 is not directed to mouldings. Claim 20 also includes the term “preferably” which renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention and also includes a broad range followed by a narrow range. Additionally, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c).

Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 20 recites the broad recitation 50-500nm, and the claim also recites 100-500nm as well as 200-280nm which are narrower statements of the range/limitation.

8. Claims 10-12, 17-19, 21 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. First it is noted that the language "characterised in that" as recited in Claims 10-12, 17-19, and 21 holds no specific legal meeting and applicant is requested to use language such as "comprising" instead. The term "essentially monodisperse size distribution" in Claim 10 is a relative term which renders the claim indefinite. The term "essentially monodisperse" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Hence, it is unclear how closely to a monodispersed size distribution the particles need to be in order to be considered as having an "essentially monodisperse size distribution". Regarding claims 10, 19 and 21, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following

the phrase are part of the claimed invention. With regards to Claim 10, the process steps b) and c) are unclear, e.g. "are added" to what, subsequently to what?

9. With respect to a prior art search, Claims 1-9, 13-16, 20 and 22-23 have not been further considered on the merits given the "Use" limitation and lack of clarity issues as discussed above.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 18, 19, 21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Mavromatis et al (USPN 3,515,625.) Mavromatis et al teach a porous elastomeric composite material comprising regularly arranged cavities wherein each cavity contains essentially one filler particle (Abstract; Figures; Col. 3-4.) Mavromatis et al teach that the filler particle may be selected according to the particular property which it is desired to impart to the composite material wherein metallic, magnetic and glass particles may be utilized and the particles may be further coated with a coating which produces a non-adherent surface, such as a metal oxide coating, a highly plasticized layer of the matrix material itself or another elastomeric material (Col. 4, lines 3-58.) With respect to Claim 24, the Examiner takes the position that the limitation "Electro-optical device" provides no additional structural or material limitations to differentiate the claimed invention from the teachings of Mavromatis et al.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 10-12, 17-19, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akarsu et al (USPN 7,449,245) in view of the admitted prior art. Akarsu et al teach a method of producing a photocatalytic layer comprising TiO₂ particles having a particle size less than 200nm, dispersed throughout the layer or provided in a concentration gradient wherein, in general, the method comprises: a) forming TiO₂ particles from a hydrolyzable titanium compound or providing existing TiO₂ particles, b) mixing the particles with a surface modifier to form surface-modified TiO₂ particles, c) adding an inorganic matrix-forming material and/or an organically modified inorganic matrix-forming material to the TiO₂ particles, such as metal oxide matrix-forming materials, d) applying to a substrate, e) hardening by drying and heating to form a photocatalytic layer, and f) photocatalytically decomposing the organic groups around the TiO₂ particles; wherein the TiO₂ particles preferably have a particle size less than 10nm (*hence forming a cavity around the TiO₂ particles*; Entire document; particularly Col. 2-5 and Col. 8-16.) Akarsu et al teach that TiO₂ particles produced from hydrolyzable titanium compounds exhibit agglomerate-free dispersibility (Col. 7, lines 43-56.) Akarsu et al do not specifically teach that the particles have "essentially monodisperse size distribution" however the admitted prior art teach that it is known in the art that similar structure are produced utilizing particles with "essentially monodisperse size distribution" and hence would have been obvious to

one having ordinary skill in the art at the time of the invention to provide uniformity in the pores produced. In terms of the instantly claimed "mechanical force" methods of Claim 12, Akarsu et al teach various methods for a producing the layer wherein a mechanical force is applied such as by flow coating, knife coating, and drawing but do not specifically teach the claimed methods. However, such methods are obvious methods for producing a layer or molding and would have been obvious to one having ordinary skill in the art at the time of the invention.

14. Claims 10-12, 17-19, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al (USPN 6,217,999) in view of the admitted prior art. Zhang et al teach a method of producing a photochemical reactor element containing microencapsulated TiO₂ photocatalyst particles dispersed in a polysiloxane matrix wherein microencapsulated TiO₂ particles comprising a shell material or naked TiO₂ particles are dispersed in an alkoxy sol, shaped and then irradiated with light having an energy greater than the band gap of TiO₂ photocatalyst at a dose sufficient to decompose the hydrocarbon groups of the surrounding matrix in the vicinity of the particles while retaining the polysiloxane network of the material (Entire document, particularly Abstract; Col. 2-Col. 4.) Zhang et al teach that the photochemical element may take any desired shape such as films formed by conventional methods including bar coating, knife coating, spraying, molding. Zhang et al do not specifically teach that the particles have "essentially monodisperse size distribution" however the admitted prior art teach that it is known in the art that similar structure are produced utilizing particles with "essentially monodisperse size distribution" and hence would have been obvious to one having ordinary skill in the art at the time of the invention to provide uniformity in the pores produced. In terms of the instantly claimed "mechanical force" methods of Claim 12, Zhang et al teach various methods

for a producing the layer wherein a mechanical force is applied but do not specifically teach the claimed methods. However, such methods are obvious methods for producing a layer or molding and would have been obvious to one having ordinary skill in the art at the time of the invention.

15. Claims 10-12, 17-19, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Zhang et al or Akarsu et al. The admitted prior art (Paragraphs 0002-0020) discloses the instant process of making inverse opal structures by using a dispersion of particles, including core/shell particles having an essentially monodisperse size distribution and connected to the shell via an interlayer, optionally adding wall precursors as claimed and removing the particles to form a porous structure is known. The admitted prior art also teaches an inverse structure containing titanium dioxide nanoparticles dispersed in a carbon matrix (Paragraph 0020.) The only aspect not taught in the admitted prior art is a step of removing only the shell of the core/shell particles, however, Zhang et al and Akarsu et al both teach porous materials formed from titanium dioxide particles wherein hydrocarbon groups surrounding the titanium dioxide particles are decomposed by irradiation. Since the prior art teaches the use of core/shell particles in producing inverse opal structures wherein the shell comprises hydrocarbon materials, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement an irradiation step taught by Zhang et al or Akarsu et al to decompose the shell of the particles vs. removing the core of the particles as taught by the admitted prior art, given the predictable results and reasonable expectation of success.

Double Patenting

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 10-12 and 17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 6-9, 14, and 23 of copending Application No. 10/529793 in view of Zhang et al or Akarsu et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one having ordinary skill in the art at the time of the invention to combine dependent claim limitations and to remove only the shell of the core/shell particles and not the core given that Zhang et al and Akarsu et al teach a similar porous structure wherein the shell or hydrocarbon groups around the titanium dioxide particles are removed by irradiating the particles.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R. Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 10:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Monique R Jackson/
Primary Examiner, Art Unit 1794
December 21, 2009